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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/676,556	09/30/2000	Yen-Kuang Chen	042390.P8657	6918

7590 08/26/2004

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EXAMINER

DO, CHAT C

ART UNIT PAPER NUMBER

2124

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/676,556

Applicant(s)

CHEN ET AL.

Examiner

Chat C. Do

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-10,12,13,15-22 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10, 12-13, 15-22, 24-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This communication is responsive to Amendment filed 06/01/2004.
2. Claims 1, 3-10, 12-13, 15-22, and 24-28 are pending in the application. Claims 1, 13, and 25 are independent claims. In Amendment, claims 1, 8, 13, 15, 17-18, 20-21, and 24-25 are amended and claims 2, 11, 14, and 23 are cancelled. This action is made final.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-5, 12-13, 15-17, and 24-27 are rejected under 35 U.S.C. 103(a) as being obvious over Thuyen Le et al. ("A new flexible architecture for variable length DC targeting shape-adaptive transform") in view of Mogi et al. (U.S. 6,687,724).

Re claim 1, Thuyen Le et al. disclose a method comprising a multiplying a matrix "[A]" ( $C_n$ ) by a matrix "[X]" ( $x(n)$ ) to obtain a matrix "[Y]" ( $y_n$ ) (as seen in equations 1-2 and left column page 1950 lines 5-18) wherein multiplication operations within a matrix "[A]" are paired (Figure 1 and left column page 1951 lines 3-7 wherein plurality of multiplications are performed by plurality of CFMB modules and the plurality of CFMB modules are parallel; CFMB-0 & CFMB-1; CFMB-2 & CFMB-3). Thuyen Le et al. further disclose in equation 2 that a matrix "[A]" ( $C(n)$ ) is factored into a butterfly matrix "[B]" (F of equation 3), a

shuffle matrix "[S]" (S of equation 7), and a multiplication matrix "[M]" (P of equation 4); and wherein multiplication operations within multiplication matrix "[M]" are grouped for simultaneous execution (as seen in Figure 1). Thuyen Le et al. do not disclose the method is implemented using machine-implemented Packed Multiply and Add (PMADDWD) instructions. However, Mogi et al. disclose in Figure 2 a PMADDWD instruction (col. 2 lines 5-16). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to implement the using PMADDWD instructions as seen in Mogi et al.'s invention into Thuyen Le et al.'s invention because it would enable to increase the system performance by executing multiple data simultaneously.

Re claim 3, Thuyen Le et al. further disclose at least one n-point discrete cosine transform is performed (left column in page 1950 lines 8-10).

Re claim 4, Thuyen Le et al. further disclose multimedia compression is performed (left column in page 1949 lines 1-5 of introduction section).

Re claim 5, Thuyen Le et al. further disclose at least one SA-DCT is performed (right column in page 1949 lines 1-6 and left column in page 1950 lines 1-6 of algorithm for variable length DCT section).

Re claim 12, Thuyen Le et al. further disclose implemented using at least one of VLSI, single processor, and vector processing (right column in page 1949 lines 9-15).

Re claim 13, it is a readable storage medium claim of claim 1. Thus, claim 13 is also rejected under the same rationale in the rejection of rejected claim 1.

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Re claim 15, it is a readable storage medium claim of claim 3. Thus, claim 15 is also rejected under the same rationale in the rejection of rejected claim 3.

Re claim 16, it is a readable storage medium claim of claim 4. Thus, claim 16 is also rejected under the same rationale in the rejection of rejected claim 4.

Re claim 17, it is a readable storage medium claim of claim 5. Thus, claim 17 is also rejected under the same rationale in the rejection of rejected claim 5.

Re claim 24, it is a readable storage medium claim of claim 12. Thus, claim 24 is also rejected under the same rationale in the rejection of rejected claim 12.

Re claim 25, it has the same limitation as cited in claim 3. Thus, claim 25 is also rejected under the same rationale in the rejection of rejected claim 3.

Re claim 26, it has the same limitation as cited in claim 5. Thus, claim 26 is also rejected under the same rationale in the rejection of rejected claim 5.

Re claim 27, it has the same limitation as cited in claim 12. Thus, claim 27 is also rejected under the same rationale in the rejection of rejected claim 12.

5. Claims 6-8 and 18-20 are rejected under 35 U.S.C. 103(a) as being obvious over Thuyen Le et al. ("A new flexible architecture for variable length DCT targeting shape-adaptive transform") in view of Mogi et al. (U.S. 6,687,724), as applied to claims 1 and 13 respectively above, in further view of Huang (U.S. 5,610,849).

Re claims 6-8, Thuyen Le et al. in view of Mogi et al. do not disclose at least one n-point IDCT/SA-IDCT is performed for multimedia decompression. However, Huang discloses in Figure 1 that the same hardware configuration can be used either for DCT/IDCT in multimedia for compression and decompression. In addition, the IDCT/SA-IDCT is just the inversed process of DCT/SA-DCT. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the IDCT/SA-IDCT process as seen in Huang's Figure 1 into Thuyen Le et al. in view of Mogi et al.'s invention because it would enable the operator to retrieve the approximate original data back after manipulating.

Re claim 18, it is a readable storage medium claim of claim 6. Thus, claim 18 is also rejected under the same rationale in the rejection of rejected claim 6.

Re claim 19, it is a readable storage medium claim of claim 7. Thus, claim 19 is also rejected under the same rationale in the rejection of rejected claim 7.

Re claim 20, it is a readable storage medium claim of claim 8. Thus, claim 20 is also rejected under the same rationale in the rejection of rejected claim 8.

6. Claims 9-10, 21-22, and 28 are rejected under 35 U.S.C. 103(a) as being obvious over Thuyen Le et al. ("A new flexible architecture for variable length DCT targeting shape-adaptive transform") in view of Mogi et al. (U.S. 6,687,724), as applied to claims

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1, 13, and 27 respectively above, in further view of William Smith ("Subword extensions for video processing on mobile systems").

Re claims 9-10, Thuyen Le et al. in view of Mogi et al. do not disclose the above method is implemented using single instruction multiple data SIMD operations and MMX operations. However, William Smith discloses in the non-patent document a method of processing information using the SIMD instruction (page 13 providing video-over-wireless paragraphs) and the MMX instruction (page 15 matrix math extensions paragraphs). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to implement the whole computation in a SMID operation and MMX operations as seen in William Smith's invention into Thuyen Le et al. in view of Mogi et al.'s invention because it would enable to increase the system performance by executing multiple data simultaneously and efficiently in matrix format.

Re claim 21, it is a readable storage medium claim of claim 9. Thus, claim 21 is also rejected under the same rationale in the rejection of rejected claim 9.

Re claim 22, it is a readable storage medium claim of claim 10. Thus, claim 22 is also rejected under the same rationale in the rejection of rejected claim 10.

Re claim 28, it has the same limitation as cited in claim 9. Thus, claim 28 is also rejected under the same rationale in the rejection of rejected claim 9.



*Response to Arguments*

7. Applicant's arguments filed 06/01/2004 have been fully considered but they are not persuasive.

- a. The applicant argues in page 8 second paragraph for independent claims 1, 13, and 25 that neither Thuyen Le, Mogi, nor the combination discloses multiplication operations within a multiplication matrix are grouped for simultaneous execution.

The examiner respectfully submits that the applicant does not point out clearly in the claim language how the multiplication operations within the matrix are grouped for simultaneous execution and how the grouping multiplication operations of the present application is differed from the grouping multiplications cited in Thuyen Le's reference Figure 1.

Therefore, Figure 1 in Thuyen Le's reference clearly points out the multiplication operations ( $d_N$  with  $P_{k,N}$ ) within a multiplication matrix are grouped (e.g.  $D_0$  and  $D_1$  are multiplied and grouped as seen in middle box in Figure 1 and Figure 2) for simultaneous execution.

- b. The applicant argues in page 9 for claims 6-8 that neither Thuyen Le, Mogi, Huang, nor the combination discloses multiplication operations within a multiplication matrix are grouped for simultaneous execution.

The examiner respectfully submits that the limitation "multiplication operations within a multiplication matrix are grouped for simultaneous

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execution” is clearly cited in Figures 1-2 of Thuyen Le’s reference and the above discussion.

- c. The applicant argues in page 10 for claims 9-10 that neither Thuyen Le, Mogi, Smith, nor the combination discloses multiplication operations within a multiplication matrix are grouped for simultaneous execution.

The examiner respectfully submits that the limitation “multiplication operations within a multiplication matrix are grouped for simultaneous execution” is clearly cited in Figures 1-2 of Thuyen Le’s reference and the above discussion.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655.

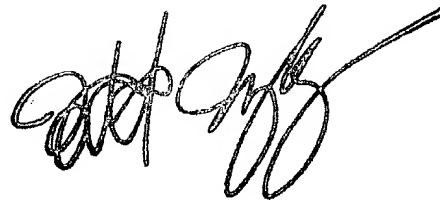
The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do  
Examiner  
Art Unit 2124

August 10, 2004



**TODD INGBERG**  
**PRIMARY EXAMINER**